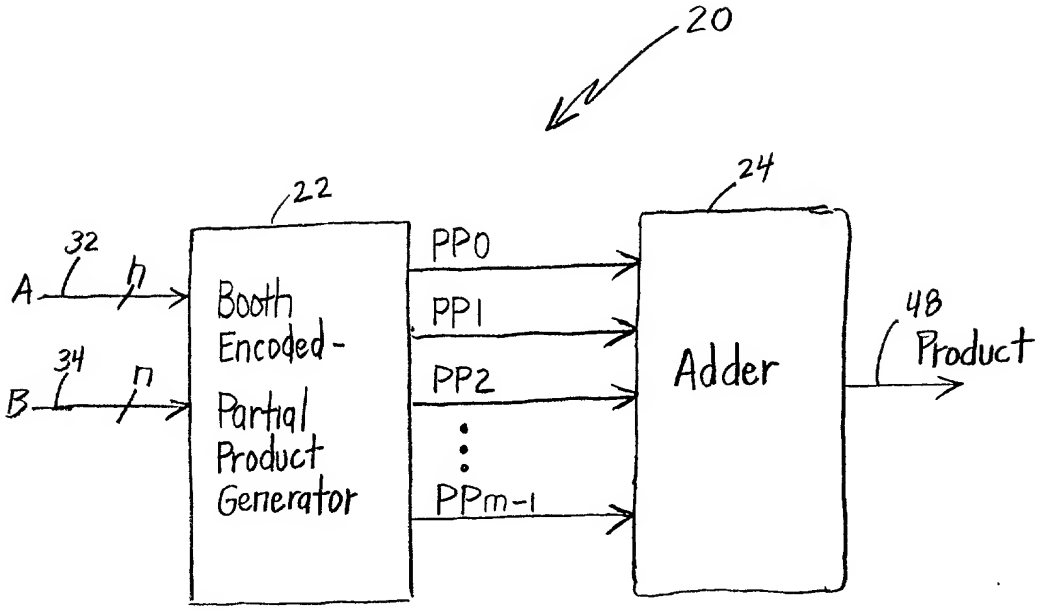
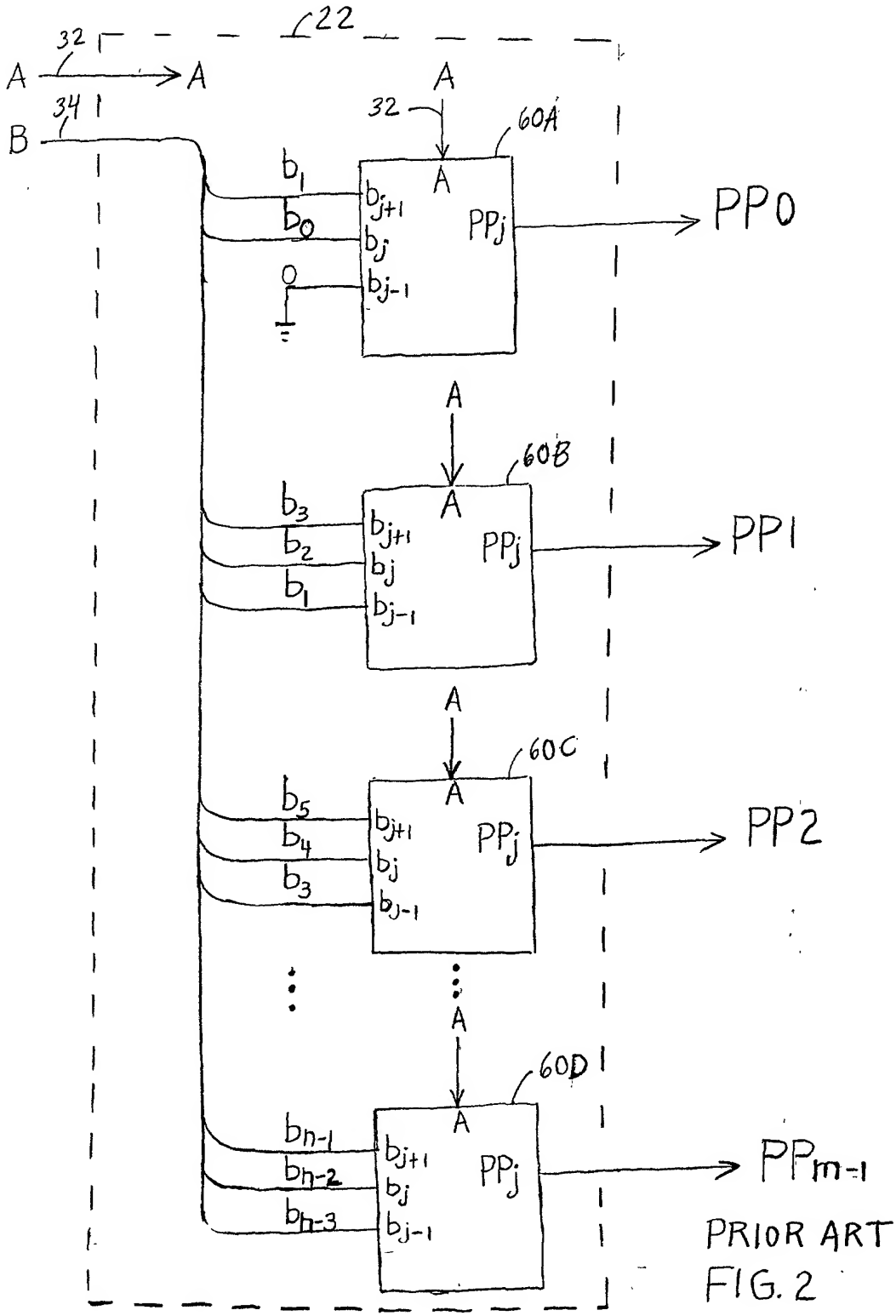


FIG. 1 PRIOR ART

10038867 v1 120804



PRIOR ART

FIG. 2

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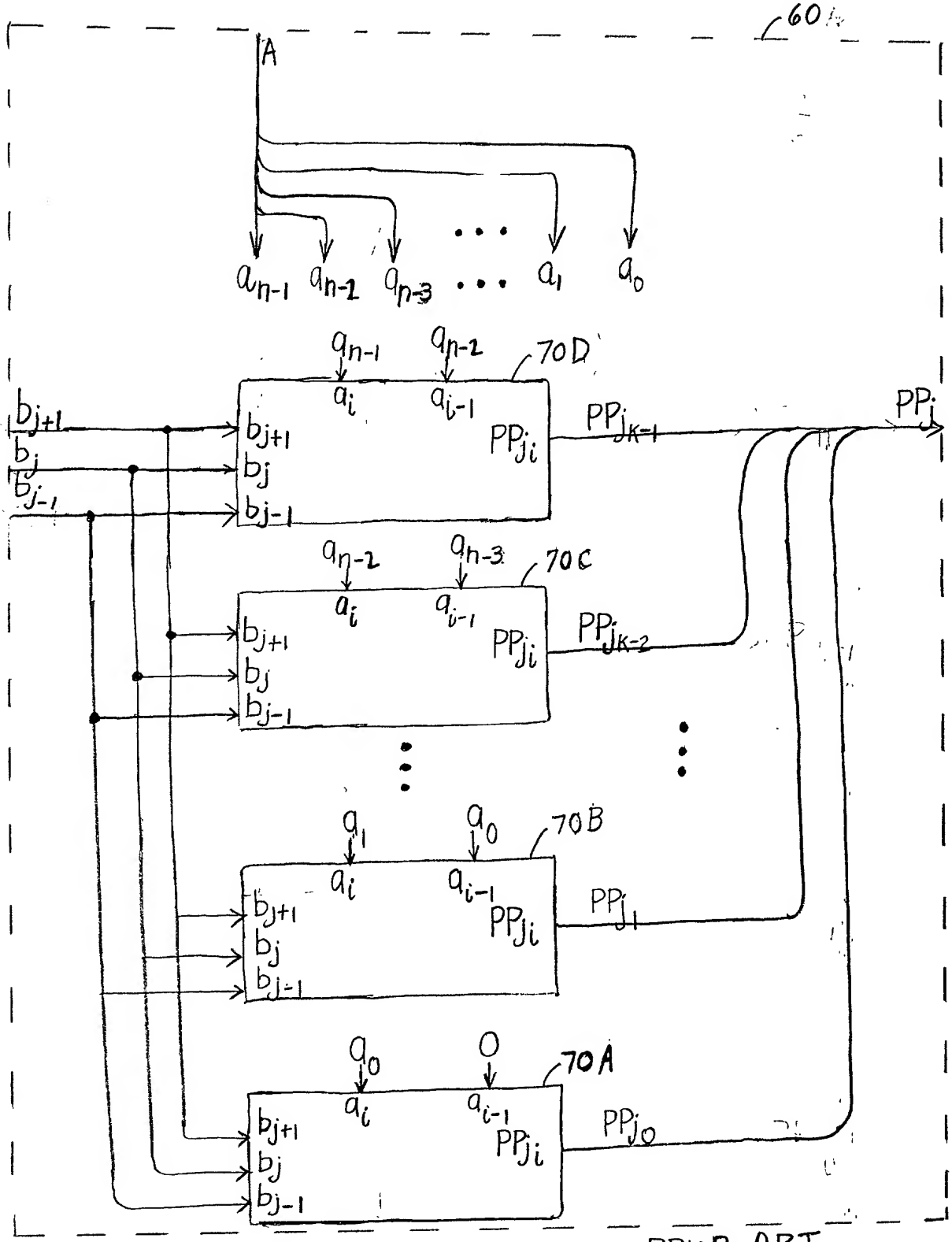

FIG. 3 PRIOR ART

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FIG. 4A PRIOR ART

where

$$X_1 = b_j \oplus b_{j-1} \qquad \text{eq. (2)}$$

$$X_2 = \overline{b_{j+1}}\, b_j\, b_{j-1} + b_{j+1}\, \overline{b_j}\, \overline{b_{j-1}} \qquad \text{eq. (3)}$$

$$N = b_{j+1} \qquad \text{eq. (4)}$$

$$PP_{ji} = (a_i X_1 + a_{i-1} X_2) \oplus N \qquad \text{eq. (1)}$$

FIG.4B PRIOR ART

b_{j+1}	b_j	b_{j-1}	X_1	X_2	N	PP_{ji}	PP_j
0	0	0	0	0	0	0	0
0	0	1	1	0	0	a_i	A
0	1	0	1	0	0	a_i	A
0	1	1	0	1	0	a_{i-1}	2A
1	0	0	0	1	1	$\overline{a_{i-1}}$	-2A
1	0	1	1	0	1	$\overline{a_i}$	-A
1	1	0	1	0	1	$\overline{a_i}$	-A
1	1	1	0	0	1	0 * see note (1)	0 * see note (1)

Note (1)
In practice for the case of $b_{j+1} b_j b_{j-1} = 1,1,1$, the partial product bit PP_{ji} is frequently set equal to 1 in accordance with eq. (1), and therefore, the partial product PP_j is equal to 1...1. However, the net effect of the partial product bit PP_{ji} and the partial product PP_j to the adder 24 is 0 because a sign bit of 1 is added to the LSB of the partial product PP_j during compressing in the adders

Docket: 1200.1

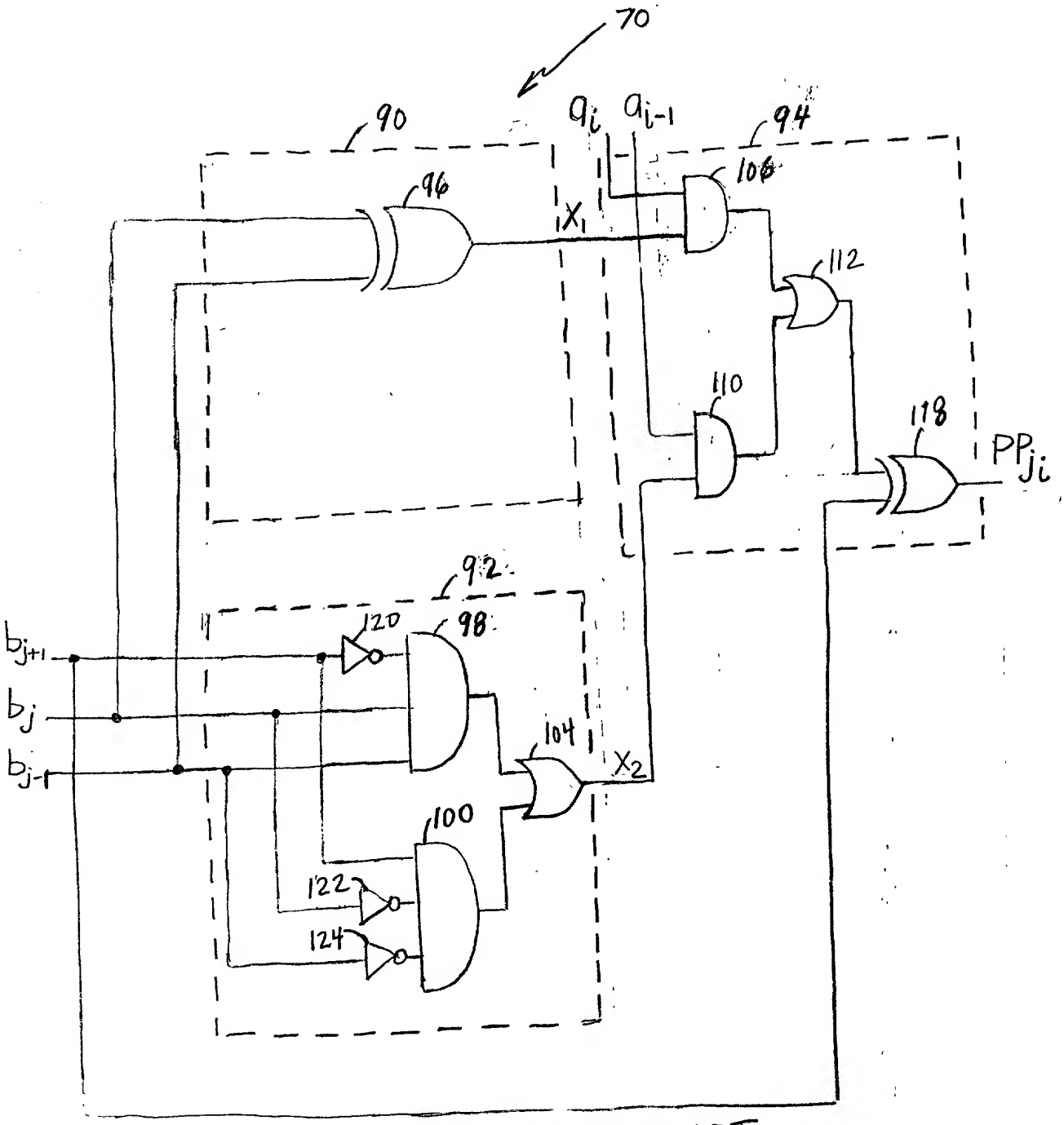

FIG. 5A PRIOR ART

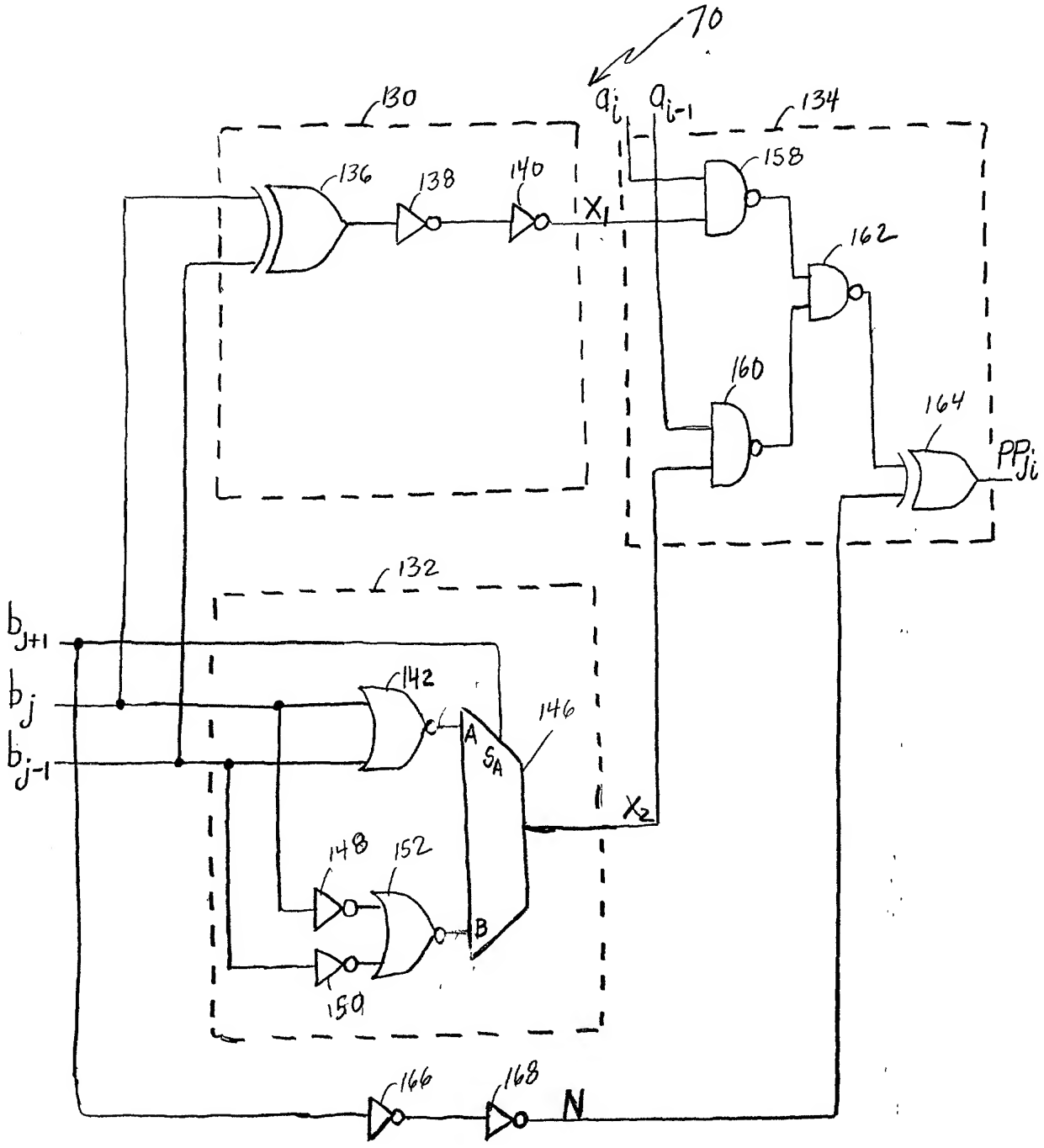

FIG. 5B PRIOR ART

Express Mail Label No. EL844536488US Date of Deposit: April 25, 2003

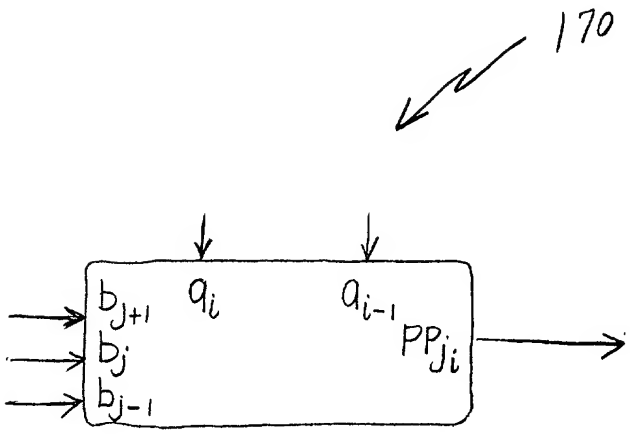

FIG. 6

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FIG. 7A

where

$S_{1,-1} = b_j \oplus b_{j-1}$ eqn. (6)

$S_2 = b_j\, b_{j-1}$ eqn. (7)

$S_{-2} = \overline{b_j}\ \overline{b_{j-1}}$ eqn. (8)

$qq_{1,-1} = a_i \oplus \overline{b_{j+1}}$ eqn. (9)

$qq_2 = a_{i-1}\ \overline{b_{j+1}}$ eqn. (10)

$qq_{-2} = \overline{a_{i-1}}\ b_{j+1}$ eqn. (11)

$PP_{ji} = S_{1,-1}\, qq_{1,-1} + S_2 qq_2 + S_{-2} qq_{-2}$ eqn. (5)

FIG 7B

b_{j+1}	b_j	b_{j-1}	$S_{1,-1}$	S_2	S_{-2}	$qq_{1,-1}$	qq_2	qq_{-2}	PP_{ji}	$\sum PP_j$
0	0	0	0	0	1	a_i	a_{i-1}	0	0	0
0	0	1	1	0	0	a_i	a_{i-1}	0	a_i	A
0	1	0	1	0	0	a_i	a_{i-1}	0	a_i	A
0	1	1	0	1	0	a_i	a_{i-1}	0	a_{i-1}	2A
1	0	0	0	0	1	$\overline{a_i}$	0	$\overline{a_{i-1}}$	$\overline{a_{i-1}}$	-2A
1	0	1	1	0	0	$\overline{a_i}$	0	$\overline{a_{i-1}}$	$\overline{a_i}$	- A
1	1	0	1	0	0	$\overline{a_i}$	0	$\overline{a_{i-1}}$	$\overline{a_i}$	- A
1	1	1	0	1	0	$\overline{a_i}$	0	$\overline{a_{i-1}}$	0	0

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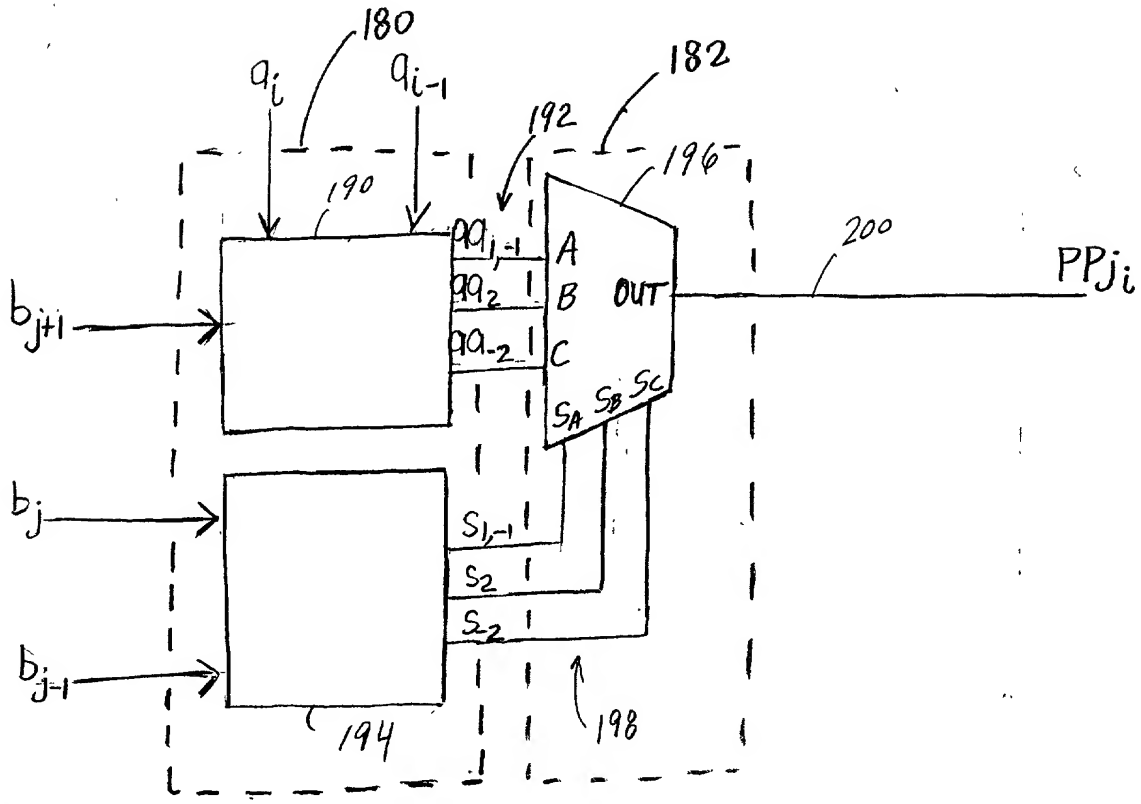

FIG. 8

APPLE-1220.01

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Express Label No.: EL 844 536 488 US

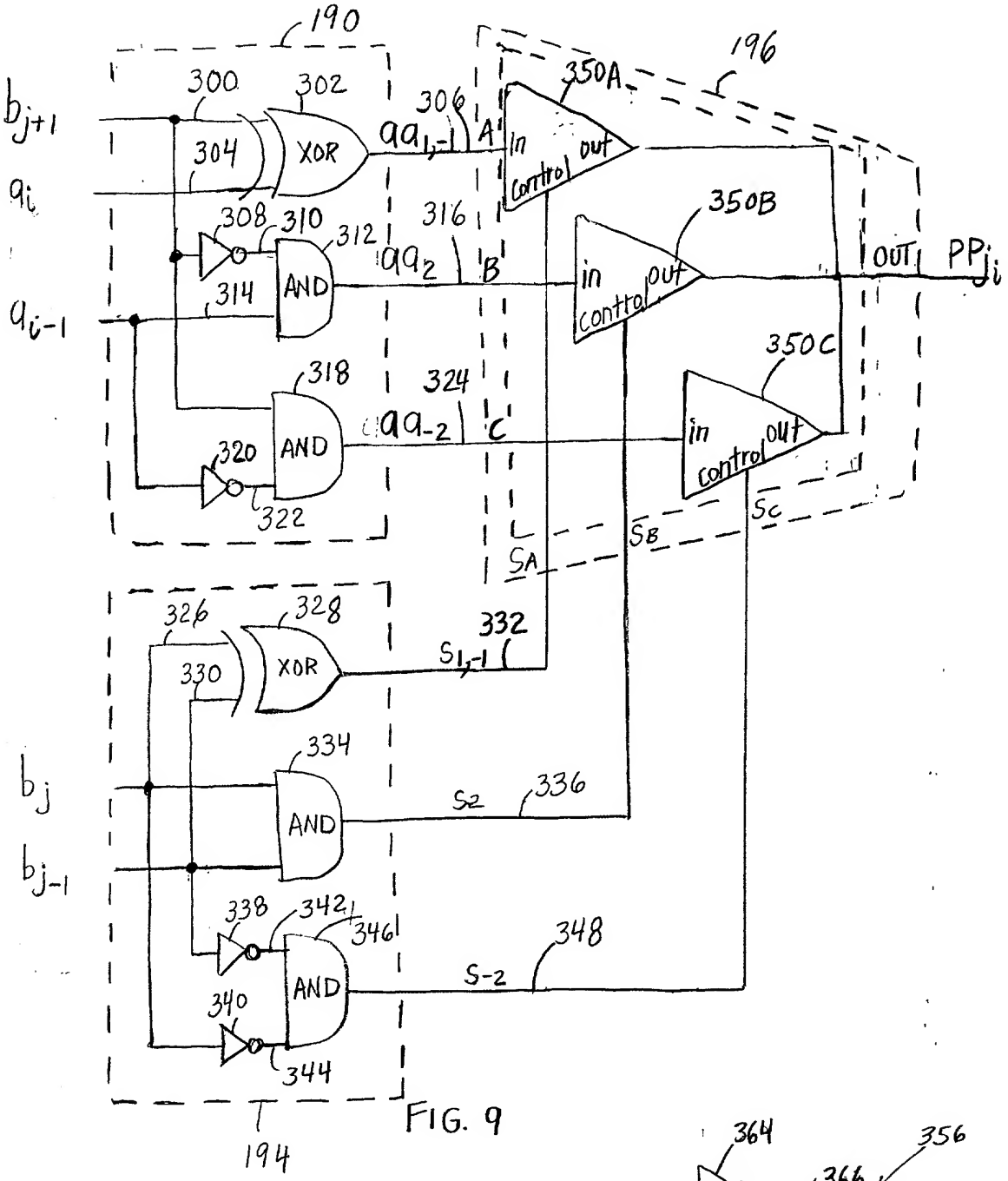

FIG. 9

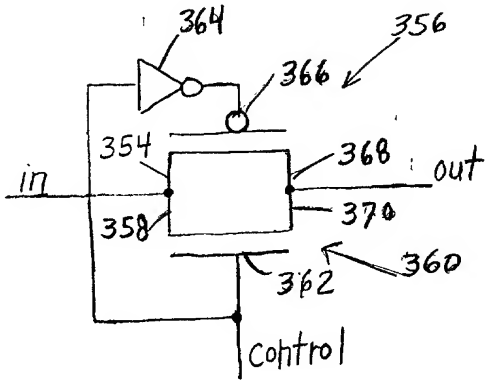

FIG. 10

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11 08 13

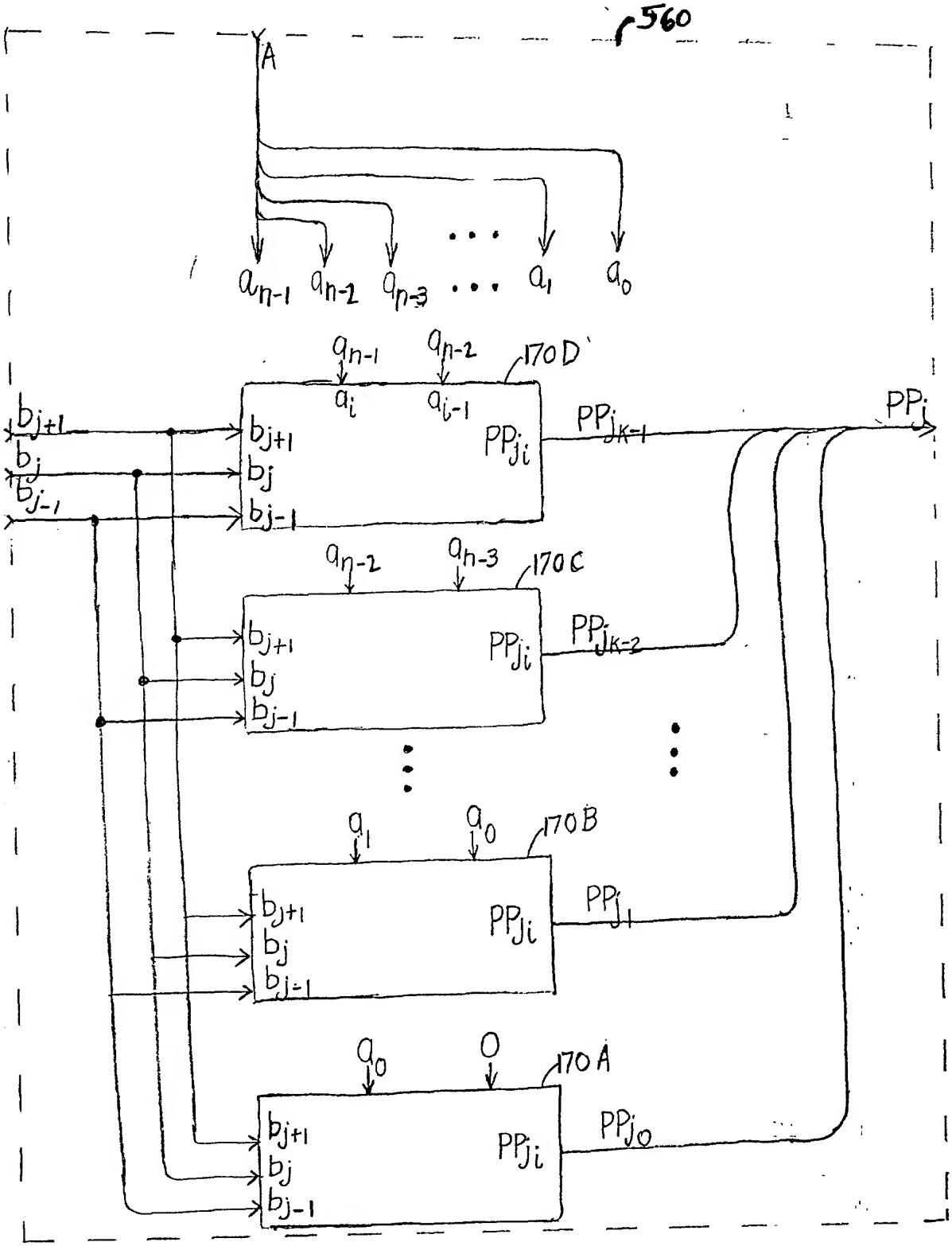

FIG. 11

Express Mail Label No. EL844536488US

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Express Label No.. EL 844 536 488 US

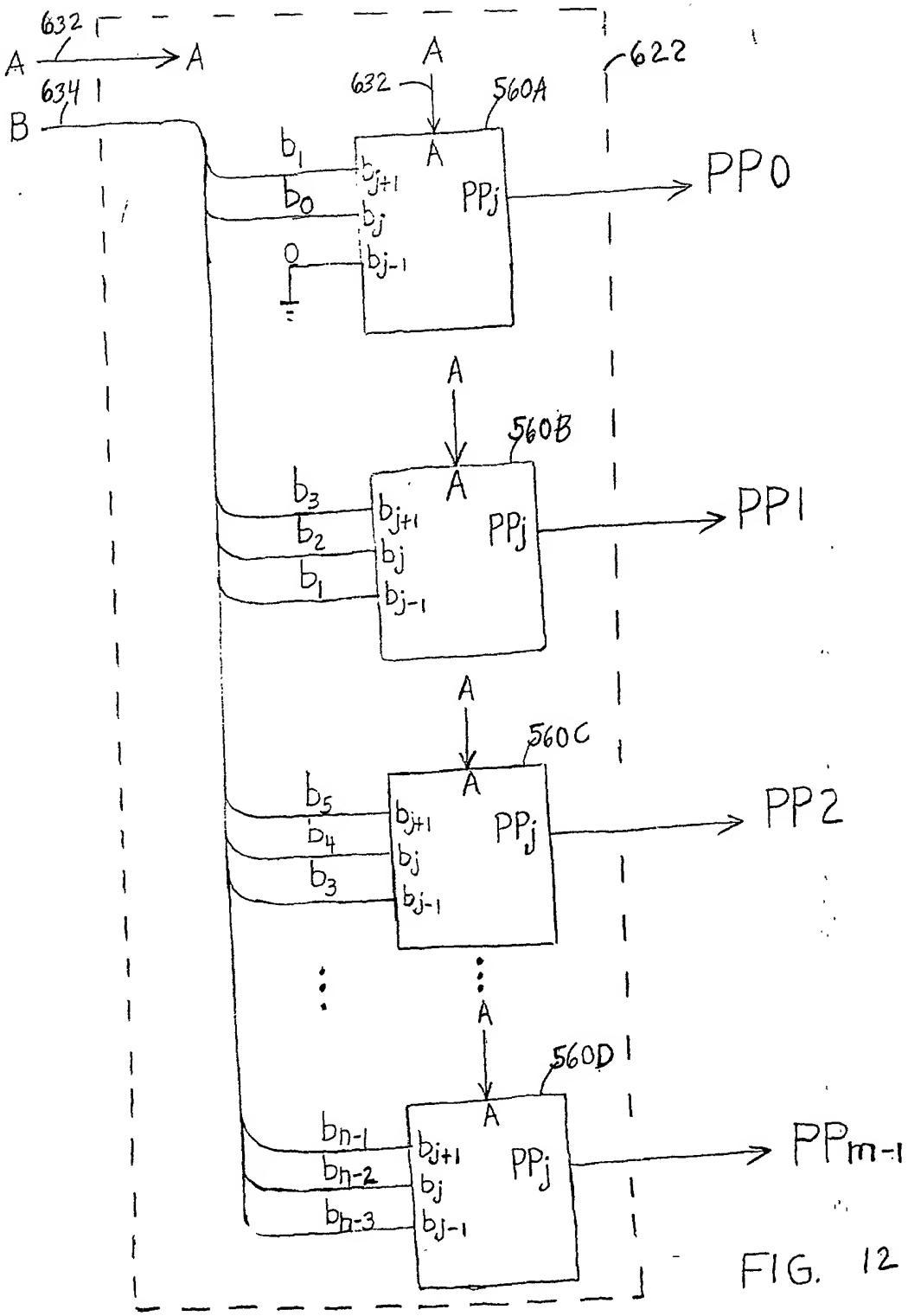

FIG. 12

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Express Label No.: EL 844 536 488 US

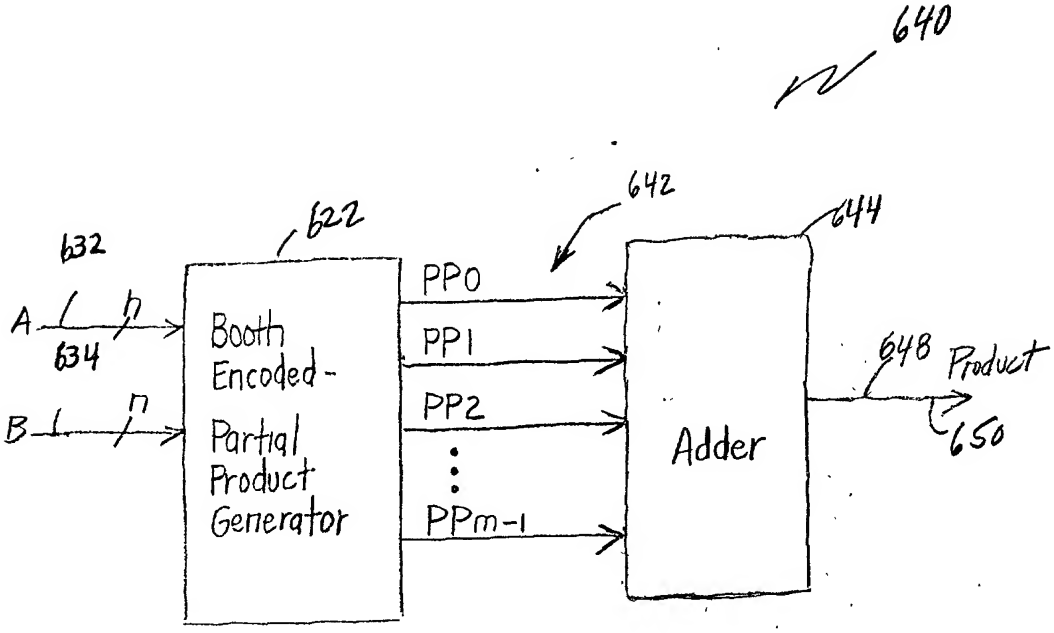

FIG. 13

10023.2.95.DOT